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ABSTRACT

To date, the focus of research has been to demonstrate the link between interpersonal problem-solving skills and adjustment. Little attention has been given to the study of how specific interpersonal problem-solving abilities evolve or to age-related changes in overall ability. White students (N=30) identified as socially well-adjusted, academically proficient and of at least average intelligence, completed the Test of Interpersonal Problem Solving, the Means-Ends Problem Solving Test, and the Peabody Picture Vocabulary Test. Grade- or age-related changes were found in all of the skills required at each step of the interpersonal problem-solving process, except alternative thinking. There was a consistent increase with age in children's abilities to recognize problems, consider information, foresee consequences, plan steps, and select solutions. Kindergarteners defined situations in concrete, simplistic terms and generated more forceful solutions than older groups who expressed more abstract conceptualizations. In general, interpersonal problem-solving ability appeared to be a developmental process characterized by quantitative and qualitative sequential changes. (Author/NRB)

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Interpersonal Problem Solving

A Developmental Analysis

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Running head: Interpersonal Problem Solving

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Interpersonal problem solving or the resolution of interpersonal dilemmas has received increased attention from researchers in recent years. Spivack, Platt and Shure (1976) have identified several interpersonal problem solving skills: problem sensitivity, alternative thinking, consequential thinking, causal thinking, and means-ends thinking. They and others (e.g., Allen et al., 1976; Elardo and Caldwell, 1979; Gesten et al., 1978) consider these skills to be important mediators of adjustment.

To date, the focus of research has been to demonstrate the link between interpersonal problem solving skills and adjustment. Little attention has been given to the study of how specific interpersonal problem solving abilities evolve or to age-related changes in the overall ability (Marsh, Note 1).

Problem solving has been conceptualized by D'Zurilla and Goldfried (1971) as a behavioral process, overt or covert, which makes available potentially effective response alternatives for dealing with a problematic situation and increases the probability of the most effective response being chosen from among them. They proposed that the problem solving process involves several steps: (1) general orientation - i.e., recognition that problems can occur and identification of them when they do happen; (2) problem definition and formulation - i.e., definition of all aspects of the situation in operational terms and delineation of the important as well as irrelevant factors pertinent to the problem;

(3) generation of alternatives - i.e., production of possible solutions appropriate to the problem; (4) decision making - i.e., evaluation and selection of the most suitable alternatives; and (5) verification - i.e., assessment of the final outcome in order to provide feedback for possible later use in similar problem situations. Each step in the problem solving process requires a specific problem solving skill. For example, the third step requires alternative thinking as identified by Spivack, Platt and Shure (1976). The present study was designed as an exploratory investigation to identify age-related changes in specific skills and in the overall interpersonal problem solving ability.

Method

Subjects

Subjects were 30 white, middle class boys, 10 each from the kindergarten, fourth, and eighth grades of a Catholic school. Respective mean ages were 5.8, 9.7, and 13.6 years. All had been previously identified by their teachers as socially well adjusted, academically proficient and of at least average intelligence.

Procedure

Each child was individually administered the Test of Interpersonal Problem Solving. This measure was designed for this study to assess the overall problem solving ability and the specific problem solving skills involved: (1) problem recognition - i.e., identification that a problem does exist; (2) problem formulation - i.e., delineation of the major aspects of the problem situation considered important for conflict resolu-

tion; (3) alternative thinking; (4) consequential thinking - i.e., generation of potential consequences to the various alternatives proposed; and (5) solution preference - i.e., evaluation and selection of the most appropriate solution. Though not within the D'Zurilla and Goldfried description, consequential thinking was included as it had been previously shown by Spivack et al (1976) to be significantly related to behavioral adjustment.

The measure consists of five stories that typify the types of interpersonal problems that frequently arise between children and their peer group. Story dilemmas were selected on the basis of their possible relevance to a wide age span and included such conflict situations as (1) the selection of a team assistant captain; (2) the persuasion of friends to attend a show; (3) the securing of a toy from other children; (4) the making of new friends; and (5) the selection of which of two friends to play with.

Each story is accompanied by a simple posterboard drawing depicting the various characters described therein. Upon completion of the initial reading of each story to the child, and before proceeding with the test inquiry, the examiner reviewed the story plot with him to ascertain that he had grasped its basic outline.

Scores, based upon frequency counts of relevant responses, were obtained for each problem solving skill examined. Additionally, an overall total problem solving score was derived by summing all of these respective individual scores. Enumerations, repetitions and elaborations of previously given responses were not included.

The quality of problem recognition, the percentage of forceful solutions and the degree to which consequential thinking dealt with behavior, psychological variables such as thoughts and feelings, or general social issues were examined, too.

Each subject was also administered two supplemental problem solving stories aimed at ascertaining the effect of story complexity and length on problem solving ability. The ability to plan the sequence of steps necessary to reach a desired goal has been shown by Spivack et al. (1976) to be significantly related to behavioral adjustment. Hence, although this ability does not fall within the D'Zurilla and Goldfried description of problem solving, the Children's Means-Ends Problem Solving Test (Shure and Spivack, 1972) was included in the present study. Stories are scored for the number of relevant means, or steps, delineated in moving towards this goal.

In order to rule out possible significant IQ differences between the three groups and to further assess the relationship between IQ and interpersonal problem solving, all subjects were given the Peabody Picture Vocabulary Test.

Inter-rater reliability for specific interpersonal problem solving skills, including means-ends thinking, ranged from 90% to 97% on the quantitative analysis and from 84% to 96% on the qualitative analysis.

Results

Univariate analyses of variance were performed to test whether boys in kindergarten, fourth and eighth grades differed significantly

on the Peabody, on the various Test of Interpersonal Problem Solving scores, and on the Means-Ends Problem Solving score. Scheffe's test (1959) was used for post-hoc examination of mean differences.

There were no significant differences between the three groups on Peabody IQ scores.

The present results revealed significant differences between the three grade levels on all problem solving scores, except on alternative thinking. Kindergarteners recognized fewer story situations as problematic than did the two older groups ($F(2,27) = 3.27$, $p < .05$). They also considered fewer pieces of information (i.e., story details) as important to subsequent problem resolution ($F(2,27) = 9.12$, $p < .001$). Differences in the number of consequences generated also appeared, with kindergarten boys producing the least and eighth graders the most ($F(2,27) = 4.03$, $p < .05$). Grade level differences in solution preference scores were also evident ($F(2,27) = 11.49$, $p < .001$). Compared to fourth or eighth graders, kindergarteners were significantly more likely to choose a final solution which reflected less consideration of various other viewpoints.

A significant difference did not emerge between the three grades on the number of alternative solutions generated.

Similar results were obtained for the two supplementary problem solving stories administered. Here, too, compared to both older groups, kindergarten boys recognized fewer story situations as problematic ($F(2,27) = 3.86$, $p < .05$), considered fewer story details ($F(2,27) = 11.50$, $p < .001$), and generated fewer consequential statements ($F(2,27) = 5.60$, $p < .01$. As with the primary problem solving test, no significant

grade level effect was found for alternative thinking.

The hypothesis that overall problem solving ability would increase with age was confirmed. On the primary problem solving test, grade level had a significant main effect on total problem solving scores, ($F(2,27) = 8.17$, $p < .01$. Eighth grade children had significantly higher total scores than kindergarteners; fourth graders also had higher total scores than kindergarteners, but not significantly so. For the supplementary stories, a significant grade level effect was also obtained for total problem solving scores ($F(2,27) = 5.06$, $p < .01$), with the kindergarten group having the lowest composite score and the eighth graders the highest.

Analyses of the content of subjects' responses also revealed significant grade level differences. Kindergarten boys tended to define the conflict situations in rather concrete, simplistic terms while more concise, abstract conceptualizations were characteristic of the two older groups ($F(2,27) = 7.55$, $p < .01$). Similarly, they gave a higher percentage of forceful alternatives than did the others ($F(2,27) = 3.00$, $p < .10$). Eighth graders relied the least upon such means of resolution. Kindergarten boys, compared to both older groups, also generated consequences which more frequently dealt with behavior ($F(2,27) = 4.46$, $p < .01$). These latter two groups divided their concern more equitably between behavioral, psychological and general social issues. For their final solutions, however, all three grades preferred means other than force to resolve the conflict.

A significant grade level effect was also evident for means-ends problem solving scores ($F(2,27) = 7.80$, $p < .01$).

Kindergarten children generated the fewest means or steps while eighth graders produced the most.

In addition to the univariate analyses of variance, correlational analyses were performed to test whether there were significant relationships between the various problem solving scores, Peabody IQ score and means-ends problem solving score.

The first was a partial correlation analysis for the total sample with the effect of grade level controlled. Several significant relationships appeared between: (1) means-ends thinking and problem recognition, ($r = .37$, $p < .05$); (2) means-ends thinking and problem formulation ($r = .37$, $p < .05$); and (3) alternative thinking and consequential thinking ($r = .92$, $p < .001$).

In addition, within grade level analyses were also conducted. Within the kindergarten group, significant correlations were found to exist between: (1) problem formulation and alternative thinking ($r = .72$, $p < .05$); (2) problem formulation and consequential thinking ($r = .69$, $p < .05$); and (3) alternative thinking and consequential thinking ($r = .94$, $p < .001$).

For the fourth grade boys, relatively few significant relationships emerged. Once again, alternative thinking and consequential thinking were found to be highly correlated ($r = .89$, $p < .001$). A somewhat unexpected finding, however, was a negative correlation between problem formulation and solution preference ($r = -.63$, $p < .05$). Thus, the more pieces of information the child initially considers pertinent to the conflict situation, the less his final preferred solution plan reflects the consideration of various other viewpoints relevant to the problem.

The greatest number of significant correlations was found for the eighth graders. Here, fairly strong relationships were found between: (1) problem recognition and alternative thinking ($r = .63$, $p < .05$); (2) problem recognition and consequential thinking ($r = .71$, $p < .05$); (3) problem recognition and solution preference ($r = .68$, $p < .05$); and (4) problem recognition and means-ends thinking ($r = .79$, $p < .01$). Other significant relationships found were between alternative and consequential thinking ($r = .94$, $p < .001$) and between alternative thinking and means-ends thinking ($r = .63$, $p < .05$).

The final correlational analysis performed examined the relationship between Peabody IQ scores and the various problem solving scores. The partial correlational analysis undertaken for the entire sample did not reveal any significant correlation between them nor did the within grade level analyses for either the fourth or eighth grades. Unexpectedly, for the kindergarten group, significant negative correlations were found between: (1) IQ problem formulation ($r = -.73$, $p < .05$); (2) IQ and alternative thinking ($r = -.73$, $p < .05$); and (3) IQ and consequential thinking ($r = -.71$, $p < .05$).

Discussion

The present investigation yielded evidence of grade or age-related changes in all, except alternative thinking, of the skills required at each step of the interpersonal problem solving process. There is a consistent increase with age in children's abilities to

recognize the existence of a problem, to consider pieces of information pertinent to subsequent conflict resolution, to foresee possible consequences of alternative solutions, to plan steps to achieve a goal, and to select solutions reflecting the consideration of various other viewpoints. Furthermore, results from the supplementary problems indicate that even when presented with relatively simple conflict situations, these age-related changes still hold.

Qualitative changes were also found. Kindergarten children define conflict situations in concrete, simplistic terms while more concise, abstract conceptualizations are characteristic of the two older groups; they retell the story rather than draw out from the story plot the basic issues. Similarly, kindergarten boys generate more forceful solutions than do the others. They also anticipate consequences which more frequently deal with behavior while the two older groups more equitably divide their concern between behavioral, psychological and general social issues. However, all three groups prefer solutions other than force to resolve the conflicts.

In sum, interpersonal problem solving skills, except alternative thinking, undergo both quantitative and qualitative changes with increasing age or grade. These developmental trends are consistent, although the statistically significant differences are generally found between kindergarten and eighth grade. Not surprisingly, the overall problem solving ability also improves with age or grade. Age-related changes in problem solving have also been reported by Marsh (Note 1).

The unexpected finding of no significant grade level differences in alternative thinking may possibly be explained by the two older groups covertly screening alternatives and ultimately verbalizing only those which they thought were realistically viable. This hypothetical explanation is supported by their significantly less reliance upon forceful alternatives. Their screening out of forceful solutions from their fund of possible alternatives thus reduced the total number of their solutions to the range of the kindergarten group.

The results of the correlational analyses, particularly the partial correlation for the entire sample, indicate little evidence of any significant inter-correlations among the various problem solving abilities. This finding, coupled with the fact that most significant relationships found were only of moderate strength suggests that the problem solving skills measured by these various tasks cannot be considered to be interchangeable. This inference is consistent with the assertion of Spivack, Platt and Shure (1976) that one should not make the assumption that one is measuring the same unidimensional trait when examining the various problem solving skills.

The lack of a significant relationship between Peabody IQ and the various problem solving skills, except at the kindergarten level, is consistent with previous results (Spivack et al., 1976). There was a negative correlation between IQ and several problem solving scores within the kindergarten group. Among kindergarteners of at least average intelligence, those with IQs between 95 and 110 had higher problem solving scores. This unexpected finding is rather perplexing and presently cannot be adequately explained.

The present results suggest a tentative description of the developmental sequence for the interpersonal problem solving process. Even at kindergarten age, boys already exhibit rudiments of the skill required at each step of the interpersonal problem solving process. However, these skills are present in a significantly lesser degree than among eighth graders. The qualitative analysis shows that at this period, the problem is defined in terms of its specific and concrete aspects; definitions tend to be concise but vague. The relevant factors considered tend to be behavioral. Proposed solutions are apt to be action oriented and more likely to involve the use of force. The possible consequences of alternative solutions are conceptualized significantly in behavioral terms.

At fourth grade, increments in all abilities occur but the significant shifts are in problem recognition and solution preference. More problems are recognized and more solutions which take into account various perspectives are preferred. Significant qualitative changes characterize problem recognition and consequential thinking. At this period, the scope of the problem is defined more broadly. Drawing upon his knowledge and experience, the child includes ramifications beyond what is actually presented in the story. There is a definite improvement in the ability to define the problem in more abstract terms but some boys still tend to give long definitions which simply retell the story. Possible consequences are now significantly less likely to be behavioral; psychological consequences are anticipated about as often as behavioral ones.

By eighth grade, further consolidation of age-related changes in interpersonal problem solving skills takes place. At this period, the child is significantly more able than the kindergartener to recognize problems and to conceptualize them in more general social issues such as friendship and fairness. There is a much greater capacity to anticipate possible consequences, in psychological as well as behavioral terms. Attention is now given to the thoughts and feelings of others as well as to their actions. There is very little reliance upon force as an effective means of conflict resolution. Instead there is a concerted effort to arrive at solutions equitable to all parties involved.

To conclude, at least in this sample of Catholic boys, interpersonal problem solving ability appears to be a developmental phenomenon in that it is characterized by quantitative and qualitative sequential changes. This finding needs to be confirmed in a more representative sample including both sexes. Also, the relationship of this developmental process to other evolving cognitive abilities and the factors which influence its development merit further investigation.

Reference Notes

1. Marsh, D. T. The development of interpersonal problem solving. Unpublished manuscript, 1979.

References

Allen, G. J., Chinsky, J. M., Larcen, S. W., Lochman, J. E., and Selinger, H. V. Community psychology and the schools: A behaviorally oriented multilevel preventive approach. New York: Lawrence Erlbaum Association, Publishers, 1976.

D'Zurilla, T., and Goldfried, M. Problem solving and behavior modification. Journal of Abnormal Psychology, 1971, 78, 107-126.

Elardo, P. T., and Caldwell, B. M. The effects of an experimental social development program on children in the middle childhood period. Psychology in the Schools, 1979, 16, 93-100.

Gesten, E. L., deApodoca, R. F., Rains, M., Weissberg, R. P., and Cowen, E. L. Promoting peer related social competence in school. In M. W. Kent and J. E. Rolf (Eds.), The primary prevention of psychopathology. Volume 3: Promoting social competence and coping in children. Hanover, New Hampshire: University Press of New England, 1978.

Scheffe, H. The analysis of variance. New York: John Wiley and Sons, Inc., 1959.

Shure, M. B., and Spivack, G. Means-ends thinking, adjustment, and social class among elementary school-aged children. Journal of Consulting and Clinical Psychology, 1972, 38, 348-353.

Spivack, G., Platt, J. J., and Shure, M. B. The problem solving approach to adjustment. San Francisco: Jossey-Bass, Inc., 1976.

Footnote

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